Physics S1

Newtonian Physics

Physics S2

Electromagetic Spectra

Every day <u>each</u> group will need:

- **One physics textbook**
- **One computer**

Each activity includes:

WDYS

WDYT

Investigate

Physics Talk

Checking up

Physics to Go

Chapter 5: Let Us Entertain You

10/26/15

Chapter Challenge (p. 480)

5.1 Sounds in Vibrating Strings (p. 484) 10/27/15

WDYS: I see two kids and dog making music with a string, cups and a guitar they are making music with thing they have not specific instruments .

I see a little girl and little boy rolling a can across a table with a string on top of it. There is a music note on top as if the can is creating music. It also looks like the little boy is running to keep up with the can. The little girl has her hand to her ear as though she is trying to hear the sound that the can and the string are making.

WDYT: The guitarists and the violinists today make different sound by any musical notes they have and for the violinists by the way they move the stick (bow) and the guitar by how they move the fingers.

If someone was pretending to play the guitar and make a high note they would have to move their fingers faster and for onenote hold it so it could last longer the sound and then let it go.

Violinists make different sounds by sliding the bow across the strings in a different direction each time. also by the location of their hand at the top of the violin. The Guitarists make different sounds by only hitting the strings they need with their picks also by where they have their top hand located on the top of the guitar.

If someone was playing air guitar they might position their hands at the top holding down the strings with the lowest pitch so that way they can get the ones with the highest pitch.

5.1 Sounds in Vibrating Strings (p. 484) 10/27/15

IWBAT

- determine the effect of string length on the pitch of the sound produced
- determine the effect of tension on the pitch of the sound produced
- summarize experimental results.

Via

- Participating in collaborative experiments
- Team and whole class discussions to clarify key concepts
- Collaboratively answering questions targeting key concepts

5.1 Sounds in Vibrating Strings (p. 484)

10/27/15

Investigate:
Follow ALL safety precautions.

IWBAT determine the effect of string length on the pitch of the sound produced, determine the effect of tension on the pitch of the sound produced, and summarize experimental results.

5.1 Sounds in Vibrating Strings (p. 484)

10/28/15

Physics Talk (p. 486)

To produce sound something has to vibrate.
Shortening the string it increases the pitch.
Length + Tension AFFECT the pitch
When you pull the string tighter the pitch RISES
CREATS more tension.
Short tight strings, VERY high pitch. long looser strings
VERY low pitch.
STRUCK SURFACES ACT SIMILAR to STRINGS when they VIBRATE

IWBAT determine the effect of string length on the pitch of the sound produced, determine the effect of tension on the pitch of the sound produced, and summarize experimental results.

5.1 Sounds in Vibrating Strings (p. 484)

10/28/15

Checking Up (p. 487) # 1-4

Physics to Go (p. 490) # 1-4, 6-8

IWBAT determine the effect of string length on the pitch of the sound produced, determine the effect of tension on the pitch of the sound produced, and summarize experimental results.

5.2 Making Waves (p. 492) 10/28/15

WDYS:

I see a girl surfing on the beach with the waves.The guy is moving the cord to see how high the waves go.

I see a loopy cord tied on the wood and another kid holding it on the other end. A kid above the cord is riding a surfboard over it making music.

I see a lot of kids surfing and having fun some of them on the water and a girl is surfing on a cord and a boy moving the cord like a mountain.

WDYT:

The moon's gravity pulls on the water causing it to form tide's. The force of the wind may also affect the motion of the water.

Water moves to make the wave by the tectonic plates, the moon's gravitational force, and also the things moving in the water. The water vibrates and goes forward and back.

The water moves to make a wave by people being in the water, wind and by the moon gravity.

IWBAT

- calculate the speed of a wave pulse
- investigate the relationship among wave speed, wavelength, and frequency
- make a model of wave motion
- distinguish between transverse and longitudinal waves.

Via

- Participating in collaborative experiments
- Team and whole class discussions to clarify key concepts
- Collaboratively answering questions targeting key concepts

5.2 Making Waves (p. 492)

10/29/15
10/30/15

Investigate (p. 492)

Be careful to not overstretch the slinky.

IWBAT calculate the speed of a wave pulse, investigate the relationship among wave speed, wavelength, and frequency, make a model of wave motion, and distinguish between transverse and longitudinal waves.

5.2 Making Waves (p. 492)

11/03/15
11/04/15

Physics Talk (pp. 498-502)

IWBAT calculate the speed of a wave pulse, investigate the relationship among wave speed, wavelength, and frequency, make a model of wave motion, and distinguish between transverse and longitudinal waves.

5.2 Making Waves (p. 492)

11/04/15
11/05/15

Checking Up (p. 502) # 1-3

Physics to Go (p. 505) # 1-6, 10-14

IWBAT calculate the speed of a wave pulse, investigate the relationship among wave speed, wavelength, and frequency, make a model of wave motion, and distinguish between transverse and longitudinal waves.

5.3 Sounds in Strings Revisited (p. 508) 11/06/15

WDYS: *What I see in this image is that there is two people playing instruments in an art room. It is also obvious that they created their own instruments the guy created a harp with broom, string and a box. On the other hand the other girl is actually playing a original harp.They are both making music maybe they are trying to find what sounds they each make. What I see is two people make sound waves and how the bigger vibration of the string makes bigger waves. I see the kids playing instruments and making harps and bases with brooms and string I think. I see a picture of standing waves in the background and music coming out of the instruments.*

WDYT: *The pitch changes when you change the tension because you're making the string tighter or looser causing the pitch to sound different. I think that the more you pull the string it would create more waves and the vibration would be vibrating at a higher speed. so the bigger waves faster vibration and the smaller waves the slower vibration.The pitch changes when you do a lower or stronger pull. The pitch changes when the tension in the string changes because the less tension in the string the lower the pitch because the string gets more looser and when the tension increases the higher the pitch.because the string gets more tighten.*

5.3 Sounds in Strings Revisited (p. 508)

11/06/15

IWBAT

- calculate the wavelength of a standing wave on a string
- describe how the pitch of the sound produced by a vibrating string depends on the wave speed, wavelength, and frequency of the waves on the string.

Via

- Participating in collaborative experiments
- Team and whole class discussions to clarify key concepts
- Collaboratively answering questions targeting key concepts

5.3 Sounds in Strings Revisited (p. 508)

11/06/15
11/09/15

Investigate

Follow all safety procedures.

This procedure should take about 30 min .

$$v = f\lambda$$

$$\underset{(m/s)}{v_{velocity}} = \underset{(1/s)}{f_{frequency}} \cdot \underset{(m)}{wavelength\ (\lambda)}$$

IWBAT calculate the wavelength of a standing wave on a string, and describe how the pitch of the sound produced by a vibrating string depends on the wave speed, wavelength, and frequency of the waves on the string.

5.3 Sounds in Strings Revisited (p. 508) 11/09/15

Physics Talk (p. 510)

Frequency: how often something happens

Wavelength: how long a wave is  Lambda

$v = f \cdot \lambda$

$(m/s) = (1/s)(m)$

v
f | λ

Herz $(1/s)$ (s^{-1})

Frequency and wavelength have an inverse relationship: $f \downarrow \lambda \uparrow$, $f \uparrow \lambda \downarrow$

Pitch and frequency have a direct relationship

$f \uparrow$ $p \uparrow$

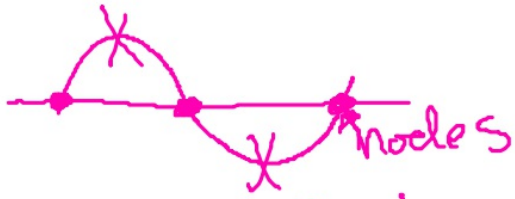
IWBAT calculate the wavelength of a standing wave on a string, and describe how the pitch of the sound produced by a vibrating string depends on the wave speed, wavelength, and frequency of the waves on the string.

5.3 Sounds in Strings Revisited (p. 508)

11/09/15

Tension and frequency have a direct relationship

String thickness and frequency have an inverse relationship



Length of string or spring

L = length of string

n = number of antinodes (standing wave)

$$L = \frac{n\lambda}{2}$$

IWBAT calculate the wavelength of a standing wave on a string, and describe how the pitch of the sound produced by a vibrating string depends on the wave speed, wavelength, and frequency of the waves on the string.

5.3 Sounds in Strings Revisited (p. 508)

11/09/15

Checking Up (p. 514) # 1-4

Physics to Go (p. 517) # 1, 2, 3, 5, & 7

IWBAT calculate the wavelength of a standing wave on a string, and describe how the pitch of the sound produced by a vibrating string depends on the wave speed, wavelength, and frequency of the waves on the string.